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GB 1488293
GB 1385004
GB 1315678
GB 1144720
GB 1063586
GB 546391
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(54) **Golf training apparatus**

(57) A golf training apparatus comprises a base $10_1$ having on an exposed upper part or surface a guide generally in the form of a rail or rails ($11_1$ $11_2$) freely to receive the blade $12_1$ of a putter or a sledge $14_1$ attached to a blade to constrain the blade in at least a part of a stroke to ensure that the said blade moves in a line with the forward face of the blade substantially square to the said line.

FIG.4

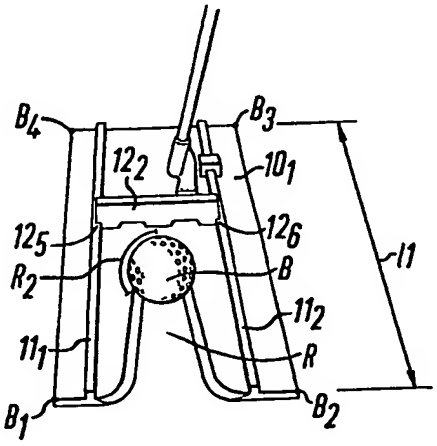


FIG.5

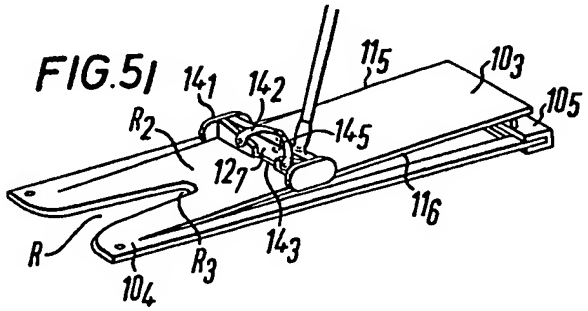


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FIG.1A

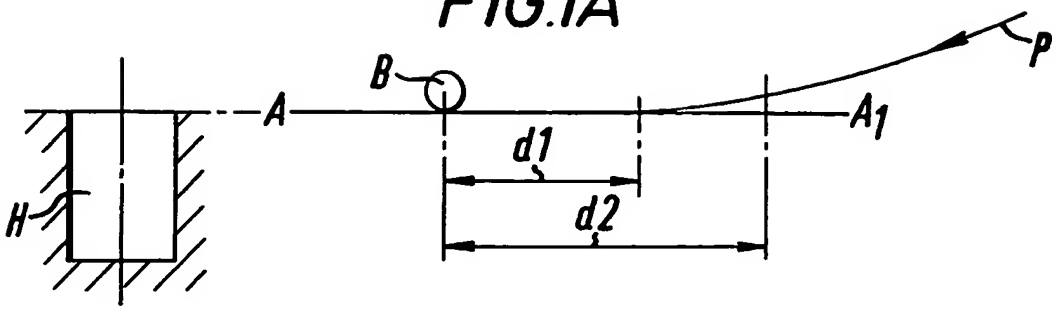
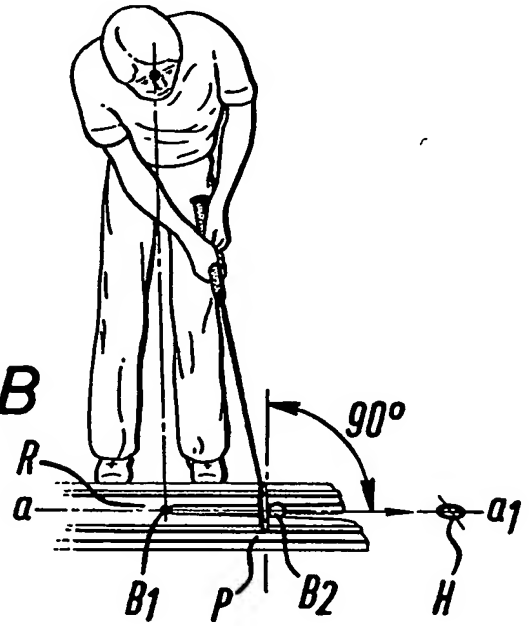



FIG.1B



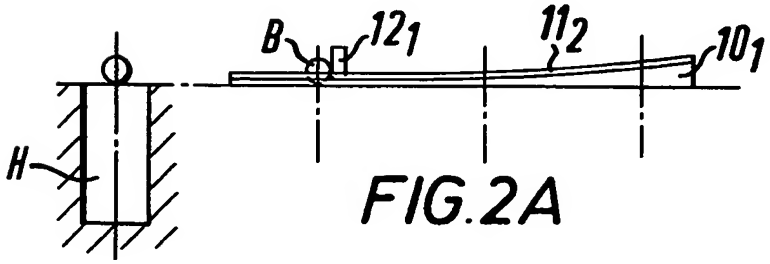




FIG.2A

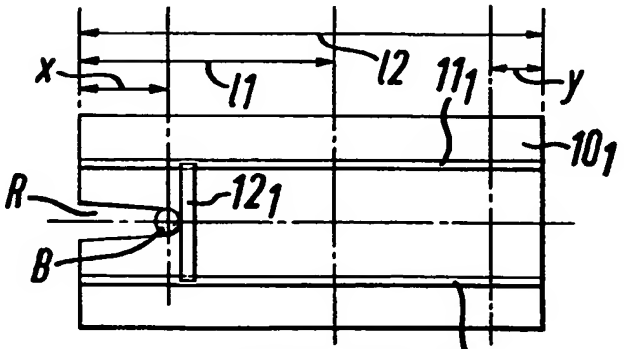



FIG.2B

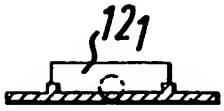



FIG. 2C

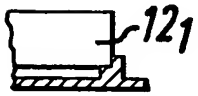



FIG. 2D

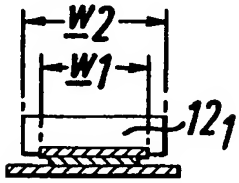



FIG. 2E$_I$


FIG. 2E$_{II}$

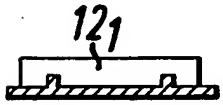



FIG. 2F

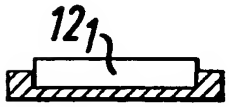



FIG. 2G

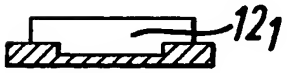



FIG. 2H

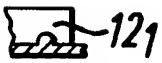



FIG. 2K


FIG. 2L

FIG. 3

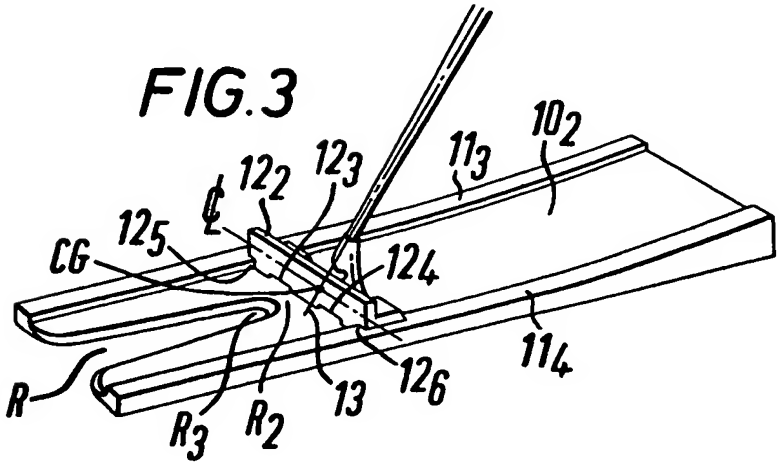


FIG.4

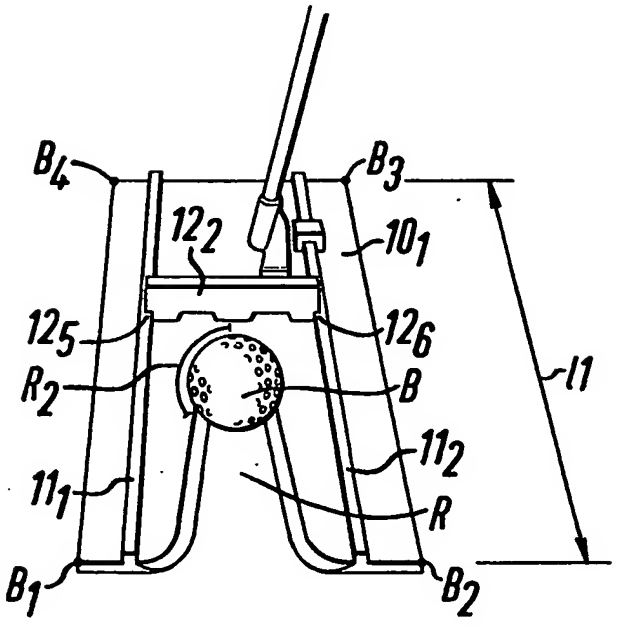
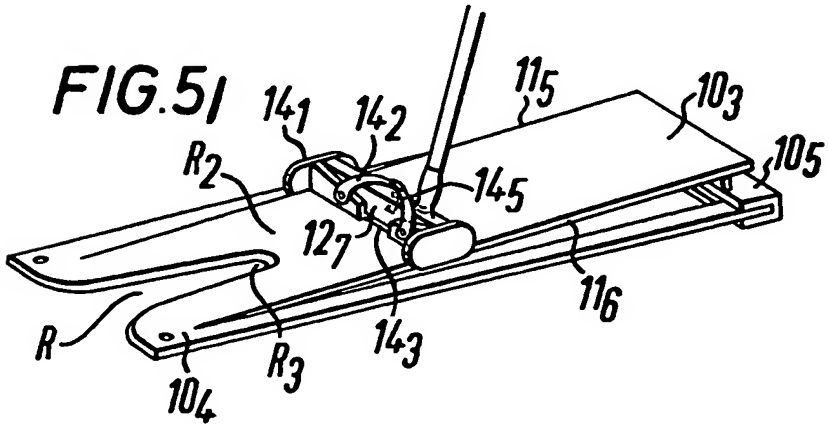



FIG.5I



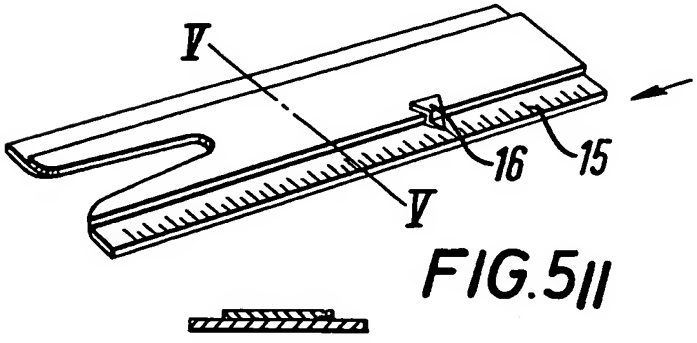




FIG.5II

SPECIFICATION

## Golf training apparatus

This invention relates to a golf training apparatus for use in training one to make an accurate stroke with a putter, that is to say a stroke on the correct line and square to that line by means of the well-known golf club with a short shaft and almost perpendicular face originally termed in the art a green putter for use on the putting green, as distinct from the now little used driving putter.

Several different golf training apparatus are known but not one is wholly satisfactory to allow a tyro golfer to obtain the correct feel for all important accurate putting strokes, especially the critical stroke to the hole on the green that ideally may be the final stroke for that specific hole. Feel in such a stroke is only obtained by a correlation of the tactile senses into tacit knowing and it is desirable to that end that the putter used in the training apparatus should not significantly change its weight, balance or form from those of the putter that is used in actual stroke play on the green; ideally the putter used in the golf training apparatus is that used on the green and is in no way changed when used in the apparatus. It is as true today as stated over a century ago that "to be a good putter is what all golfers aim at and comparatively few ever attain". (P. Chambers's Inform. People 694/1 (1857)). The present invention seeks to improve the putting ability for those willing to undergo diligent training.

To this end according to the present invention we provide a golf training apparatus comprising in combination a base having on an exposed upper part or surface a guide adapted freely to receive and directly or indirectly to constrain the blade of a putter in at least a part of a stroke to ensure that the said blade moves in a line with the forward face of the said blade substantially square to the said line.

The golf training apparatus of the present invention and its *modus operandi* will be more fully understood from the following description given by way of example with reference to the figures of the accompanying drawings in which:-

*Figures 1A, 1B* show respectively a side elevation of the geometry of a putting stroke in the vertical plane and a view in perspective of a square-to-the-line putting stroke.

*Figures 2A, 2B, 2C* are respectively a side elevation, a top plan view and an end elevation of a golf training apparatus of the invention showing a base, ball and a putter blade.

*Figures 2D, $2E_1$ $2E_{11}$, 2F, 2G, 2H, 2K* and *2L* are schematics showing alternative forms of guides and co-operating putter blades to that of Figures 2A, 2B, 2C.

*Figure 3* is a view in oblique perspective of a base and putter blade.

*Figure 4* is a view in oblique perspctive of another form of base using the same putter blade as shown in Figure 3.

*Figure $5_1$* is a view in oblique perspctive of a further form of base co-operating with a sledge to which a standard putter blade is readily attachable and detachable, and

*Figure $5_{11}$* is a modified base and section on the section station V V.

Referring now to Figure 1A there is shown the end part of the pendulum swing of the stroke of a putter blade represented by the curve P toward a golf ball represented at B. The final part of the stroke over the short distance $d_1$ is substantially in the rest plane AA1 of the ball B, but over the distance $(d_2 - d_1)$ it takes up a curved path out of the said plane.

In Figure 1B a trainee is shown striking the ball $B_2$ having addressed it initially when at rest in the golf training apparatus at $B_1$ the correct desired position being obtained from a reflecting surface at R so that the eye is essentially over or just behind the ball. Putter blade P is shown to have its forward face square to the line $aa_1$ in plane $AA_1$ which line passes through the ball points B1, B2 and hole H.

In Figures 2A, 2B, 2C a guide $10_1$ of length $\ell_1$ having a re-entrant slot R for the ball B has on its exposed upper surface rail like guides $11_1$, $11_2$ that enable a suitably adapted putter blade $12_1$ to be freely received on said base guides and constrains, that is to say restrict the motion of the putter blade to a certain course during at least a part of a stroke to move over distance $\ell_1$. If the base 10 is extended to a length $\ell_2$ then it takes up the form of the curve *P* over $(\ell_2 - \ell_1)$ where $\ell_1$ is substantially equal to $(d_1 + x)$ and $\ell_2$ $(d_2 + x + y)$, the curve being brought about from the natural swing of a golfer from anatomical considerations. Alternatively the rail guides $11_1 11_2$ and the shape of the co-operating putter blades $12_1$ may be as shown in Figures 2D, 2E, 2F, 2G, 2H and 2K.

In Figures 2F, 2H, 2K, 2L a pair of parallel rails is employed to constrain the putter blade $12_1$ to remain with its forward face substantially square to the line of the stroke. The putter blade $12_1$ in each case has a pair of recesses that co-operate with the said rails. In Figure 2H the putter blade $12_1$ has the form of a shallow letter T the 20th capital letter of the Roman alphabet.

IN Figures 2D and 2G the putter blade $12_1$ moves in a recess. The form of the recess of Figure 2G is an open top rectangular prism and the putter blade $12_1$ has a rectangular prismatic form that is constrained to move in the recess square to the line.

In Figures $2E_1 2E_{11}$ a single upstanding rail is straddled by the putter blade $12_1$ which rail has a width $w_1$ only a little less than that $w_2$ of the putter blade.

A base guide $10_2$ of the sectional form shown in Figure 2H is more fully shown in Figure 3. The putter blade $12_2$ has relief slots $12_3$, $12_4$ terminal recesses $12_5$, $12_6$ that co-operate with rail like guides $11_3$, $11_4$. The centre of gravity of the putter blade is at CG where the line of the shaft 13 extended cuts the centre line of the blade. It is to be fully appreciated that the putter shown in use for training with the base guide $10_2$ is used in play on the green without being changed or altered in any way from that used with the base guide, in this way the tacit knowing achieved by means of practice with the guide is now fully available to the player on the green. The base guide $10_2$ has a reflecting surface at least at R2 about

the curved end R3 of slot R. The golf ball will be at a position of rest R3 and seated in practise at the curved end of the slot.

In Figure 4 a base guide $10_1$ has the sectional form of Figures 2B, 2C. The base, however, is flat and the whole of it is in a single plane $B_1B_2B_3B_4$. A ball is shown seated at the end of re-entrant slot R. The base guide has two parallel rail-like integral guides $11_1$, $11_2$ upon which the putter blade $12_1$ is able freely to be placed in play by virtue of its terminal recesses $12_5$, $12_6$. The base guide has on its upper surface at least a region about R2 that is a reflecting surface. The length of the guide $10_1$ and the guide rails $12_1$, $12_2$ is $\ell_1$ as shown in Figure 2A. The guide contrains the blade in practise stroke play to move along and between the guide rails and forces the trainee to take the putter blade $12_2$ straight back and to keep it both low going back and low following through on the forward stroke, further the forward face of the putter blade is kept square-to-the-line of the stroke and it is this orthogonality that is important to successful putting and which is imparted to the trainee by repeated practise with the golf training apparatus of the invention.

In Figures $5_1$ $5_{11}$ a putter blade $12_7$ of standard form is attached to a sledge $14_1$ by a latching strap $14_2$ that latches the sledge to the blade $14_3$ by means of extension strap and hook $14_5$ shown in dotted lines. The sledge runs on rail guides $11_5$, $11_6$ which are the parallel edges of an inclined planar member $10_3$ adjustable in height by member $10_5$ co-operating with the removable base member $10_4$. The base has a reflecting surface at R2 at the inner end R3 of slot R for a golf ball (not shown). The sledge 14 is made of a material of low density ideally of a durable plastics material and has a low friction when in contact with the base guide rails $11_5$, $11_6$ which may also be made of a durable plastics material. The sledge may conveniently incorporate in its basal parts free running rollers if required. The base guide may be wholly flat as shown in Figure $5_{11}$ having a rail for the sledge as shown in the sectional view taken on section station VV (see Figure $2E_{11}$).

It is to be appreciated that a putter blade of Figures 2C to 2L inclusive may be made of an electrically conductive material preferably metal to co-operate with electrical contacts or electronic means on the guide to give visual or audible signals to the trainee in respect of the orthogonality and or position of the putter blade in or on the rail guides and hence provide an incidation of the accuracy of the stroke made along said guide.

It is further to be appreciated that the guide rails may be curved in the plane of the base if required with the putter blade constrained to be moved along said rails with an 'orthogonality' that is now at all positions a radius to a curve that terminates at the position at which the putter blade would strike the ball with its forward face substantially square to the line in the sense that the stroke is now tangential to the curve with the said forward face of the putter blade normal to the said tangent. By the term substantially square to the line is meant that the forward face of the putter blade is within $\mp 1$ degree of arc to a normal to the line.

A linear scale 15 with at least one slidable marker 16 may be provided along the edge of any base guide of Figures 2B, 3, 4, $5_1$ as shown for example along one edge of the base guide of Figure $5_{11}$. The marker (or markers) 16 will enable a player to define with accuracy the position (or positions) at which the putter blade enters (and leaves) the base guides.

It is to be understood that the putter blade may be used to move a marker, say on the back swing thereby indicating the length of the back swing.

CLAIMS

1. Golf training apparatus comprising in combination a base having on an exposed upper part or surface a guide adapted freely to receive and directly or indirectly to constrain the blade of a putter in at least a part of a stroke to ensure that the said blade moves in line with the forward face of the said blade substantially square to the said line.

2. The golf training apparatus according to Claim 1, wherein the guide is a pair of parallel rails upstanding from said base and the putter blade has in its lower edge a pair of recesses that co-operate with said rails to constrain it.

3. The golf training apparatus according to Claim 1, wherein the guide is a recess within said base having the form of an open top rectangular prism adapted to receive the putter blade which has a substantially rectangular prismatic form. (Figure 2G).

4. The golf training apparatus according to Claim 3, wherein the putter blade has a front face having the form of a shallow T the 20th capital letter of the Roman alphabet.

5. The golf training apparatus according to Claim 1, wherein the guide is a single rail upstanding from the base of a width normal to the line, said width being less than the width of the putter blade that is adapted to straddle it.

6. The golf training apparatus according to Claim 5, wherein the rail is in a plane that is inclined to the plane of the base.

7. The golf training apparatus according to any preceding claim, wherein the base has a polished surface that reflects images at least in part on its upper surface to enable a trainee when using said apparatus correctly to address the position that a ball may enjoy in said apparatus.

8. The golf training apparatus according to any preceding claim, wherein the polished surface is polished metal or plastics.

9. The golf training apparatus according to Claim 1, wherein the guide indirectly constrains a putter blade that is attached to a sledge that is adapted to co-operate directly with the guide.

10. The golf training apparatus according to Claim 9, wherein the sledge is made of a plastics material that has a low coefficient of friction when it slides on said guide.

11. The golf training apparatus according to Claim 9, wherein the sledge has one roller or more in its under surface that moves over said guide.

12. The golf training apparatus according to any preceding claim, wherein the putter blade co-

operates with electrical or electronic means on the guide to give visual or audible signals to the trainee in respect of the othogonality and or position of the putter blade in or on the guide and hence the accuracy of the stroke made along said guide.

13. A golf training apparatus constructed and arranged substantially as hereinbefore described and as shown in Figures 1A, 1B, and 2A to 2L of the accompanying drawings.

14. A golf training apparatus constructed and arranged substantially as hereinbefore described and as shown in Figures 1A, 1B and 3 of the accompanying drawings.

15. A golf training apparatus constructed and arranged substantially as hereinbefore described and as shown in Figures 1A, 1B and 4 of the accompanying drawings.

16. A golf training apparatus constructed and arranged substantially as hereinbefore described and as shown in Figures 1A, 1B, $2E_1$, $2E_{11}$, $5_1$ and $5_{11}$ of the accompanying drawings.

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